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A LONG ISLAND *LUVARUS IMPERIALIS* RAFINESQUE

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On August 2, 1940, a large *Luvarus* was discovered floundering in the surf near Georgica, East Hampton, N. Y. It was still living, and on account of its uniformly bright salmon-pink coloration and large size its discoverers, Mr. Bertil Johanssen and Mr. Walter Babinski, went to a great deal of trouble to capture it; and when brought ashore it caused much interest, speculation and comment. According to Mr. Johanssen, the peculiar small scurfy scales which had almost entirely covered it when first caught and later remained only

Fig. 1. Diagrammatic cross section.

in patches were very like a crust of dried salt upon the surface of the fish when they pulled it from the water.

When first examined (by Helmuth) all the bright pink color which had suffused the fish in life had faded away, excepting on the fins, which remained of a bright scarlet-red color, though later fading to pink. Its color otherwise was silvery, darkening on the upper part of sides to steely blue, then to dark slaty blue, becoming almost olive-black on the back. It measured 66 inches from the snout to the end of the caudal peduncle and is said to have weighed about 210 pounds. The greatest depth was measured as 17.5 in.; at origin of the first dorsal spine or ray, 16.0 in.; depth of the head through center of eye, 14.0 in.; vertical diameter of eye 2.0 in., its horizontal diameter, 1.75 in. Eye in head, 6 or 7, the snout so damaged that this proportion may not be exact. Thirteen dorsal and 14 anal rays were counted. The fish was of a remarkable shape, with a high bulging forehead, very firm and almost bony in its feel; the eye and small oval mouth set far down in the head. On the level with the eye the side

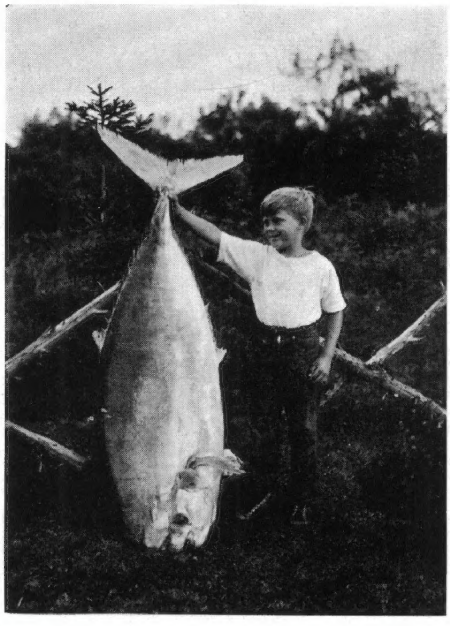

Fig. 2. The East Hampton Louvar.

of the head was flat and firm from the (mutilated) snout to the base of the pectoral fin. Above this flat "cheek" area the head was strongly concave, and this concavity, crossing beneath the bulging forehead, extended backward (as a groove) along the side almost to the caudal peduncle. Above this groove an equally strong convexity gave the fish a really remarkable appearance. A rough diagrammatic cross section at the middle of the depressed pectoral fin is shown in Fig. 1. On each side of the de-

pressed and vertically narrow caudal peduncle, there was a wide, fleshy keel which, though quite firm and thick at its junction with the peduncle itself, was flexible and almost paper thin along its free border.

The tail, front of dorsal fin, a strip of skin which still retained a coating of the peculiar scales, and several photographs of the fish were forwarded to The American Museum of Natural History for verification of the record and for study (by Nichols). The photograph which shows it best, here reproduced (Fig. 2), was sent by Mr. S. Kip Farrington, Jr., the well-known big game fisherman, who chanced to be at East Hampton and was greatly interested in this capture. *Luvarus* is a widely distributed form, rare everywhere, recorded a number of times in the eastern Atlantic, principally in the Mediterranean, twice in California, but apparently not previously from the western Atlantic. Its young are quite unlike the adult, with high and more extensive vertical fins, and were first thought to represent a different genus. Scharff (1901, Irish Naturalist, X, pp. 190–191) figures a grown specimen with initial dorsal and anal rays long, exserted, filamentous; and it should be noted that the first dorsal ray of this specimen, though now measuring only 3 inches, is broadly broken off at the end and might have extended much farther. A bony keel extending 2 inches forward from its base may also be the vestigial rudiment of more anterior spines.

Authors have remarked on the very peculiar scales of *Luvarus*. Günther (1860, Cat., II, p. 414) quotes Rev. R. T. Lowe concerning a Madeira specimen, as follows: "The whole body is smooth and naked, with the exception of irregular patches here and there (most plentifully on the head and back) of a skinny, crape-like coat or covering of minute, rough, branny scales, like a crust of half congealed snow, and easily rubbing off. This has once evidently covered the whole fish, the nakedness being the result of either natural wear or injury."

Examination of the scales of our specimen under a binocular shows them to be densely, somewhat irregularly overlapping and about $1\frac{1}{2}$ mm. in diameter. If a single scale is removed, it is seen to be papery, rather stiff and fragile, raised on a short stiff slender stem, which is fused with it away from the scale center, and usually fused in like manner at the other end with a similar but smaller scale of $\frac{1}{2}$ or less the diameter, which lies against the skin, so that the two together suggest a cuff-link. The purpose of such scales, of a form quite unique in our experience, is hard to conjecture unless it has something to do with the refraction of light, and with color. *Luvarus* would seem to be a highly specialized derivative of mackerel-like fishes, probably of considerable speed, swimming in the middle depths, feeding on small creatures, but just how it fits such an environment is a mystery.